DELIBERATIVE – CONFIDENTIAL WORKING DRAFT

Track: Engineering, Remediation and Restoration

Session: Great Expectation: Recovery after Remediation at Contaminated Sediment Sites

Abstract Title: Baseline sampling at the Portland Harbor Superfund Site: How much natural recovery is occurring?

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Abstract: The Portland Harbor Superfund Site is a 10-mile reach of the lower Willamette River in Portland, Oregon that has contaminated sediment, water, and biota for which a Record of Decision (ROD) was signed in 2017. Patterns of deposition, erosion, and contaminant distributions are heterogeneous leading to complexities in understanding spatial and temporal change at various scales. Baseline sampling was conducted in 2018 and 2019 to assess pre-construction conditions and serve as a benchmark for post-remediation monitoring. Additionally, the baseline and previous Remedial Investigation samples can be evaluated using unbiased statistical methods to understand temporal change due to natural recovery. An unbiased dataset of 483 surface sediment grab samples were collected in the site and upstream along with seven surface water transects, 135 smallmouth bass specimens, and a bathymetry survey. Various statistical and spatial analyses suggest that the areas selected in the ~~Record of Decision~~ROD for monitored natural recovery, which comprise ~~roughly~~ just over 80% of the total site area, are predominantly depositional over time and drive site-wide decreases in the different media. However, at smaller spatial scales, the areas of elevated sediment contamination (approximately 20% of total site area) are majority dynamic, have not experienced decreases in sediment concentrations, and continue to serve as sources to surface water and biota. Natural recovery is occurring at Portland Harbor but is limited to less dynamic areas where contaminant concentrations are already lower. Active remediation is therefore needed to accelerate this process and should result in more rapid declines across multiple spatial scales. Before, during and following construction, future unbiased sampling efforts are expected to give a more precise estimate of MNR rates which will help determine timeframes for achievement of cleanup levels post construction.

Commented [SS1]: Mildly concerned about this since we've been telling the baseline samplers this isn't strictly legitimate, ie. We're trying to create an unbiased dataset out of samples placed in a biased fashion in 2004, etc. Maybe we could say something like " temporal changes can be approximated by…"